

LISTING OF CLAIMS

1. (Cancelled)
2. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~1~~, 19, wherein said complex carbohydrate is a polysaccharide.
3. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~1~~, 19, wherein said complex carbohydrate is an oligosaccharide.
4. (Cancelled)
5. (Cancelled)
6. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 2, wherein said polysaccharides are selected from the group consisting of a glycosaminoglycan and a mannan.
7. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 6, wherein said glycosaminoglycan is selected from the group consisting of hyaluronic acid, heparin, heparin sulfate, low molecular weight heparin, dermatan sulfate, chondroitin sulfate, polysulfated glycosaminoglycan, keratan

sulfate, salts thereof and derivatives thereof.

8. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 2, wherein said polysaccharide is a mannan obtained from an extract of the Aloe Vera plant.

9. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 3, herein said oligosaccharide is a sialylated sugar.

10. (Cancelled)

11. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~4~~, 19, wherein said complex carbohydrates comprise a mixture of molecular weight ranges.

12. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 11, wherein said complex carbohydrates comprise a mixture of a high molecular weight complex carbohydrate and a low molecular weight complex carbohydrate.

13. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 11, wherein the high molecular weight and low molecular weight complex carbohydrate differ by molecular weight and chemical structure.

14. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 11, wherein said high molecular weight and low molecular weight complex carbohydrates range from two different size polymers of the same complex carbohydrates.

15 - 18. (Cancelled)

19. (Currently Amended) ~~An orally or mucosally administered pharmaceutical~~ A composition which comprises:

~~as an active ingredient 0.005 to 50 mg/kg body weight of~~ at least one orally ingestable or mucosally absorbable complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides, and glycosaminoglycans, with the proviso that said composition does not contain an essential oil as an active ingredient, and

a carrier selected from the group consisting of a drink, a drink mix, a food, a candy, a mouthwash, a toothpaste, a gargle, a vaporizer liquid, a gum, a lozenge, an ingestable gel, an ingestable foam, an ingestable capsule, a tablet, an ingestable

tablet, an ingestable dissolvable tablet, a suppository, and an ingestable nutritional supplement, with the proviso that when chondroitin sulfate is used as the sole glycosoaminoglycan, the carrier is not a capsule or an ingestable tablet.

20 - 21. (Cancelled)

22. (Currently Amended) ~~An orally or mucosally delivered pharmaceutical~~ A composition which comprises, as an active ingredient, a pharmacologically effective amount of at least one orally ingestable or mucosally absorbable complex carbohydrate selected from the group consisting of a mixture of high and low molecular weight ranges of ~~low purity~~ hyaluronic acid, and in a total concentration of between 0.5% and 3.0% wt/vol with the proviso that said composition does not contain an essential oil as an active ingredient

a carrier selected from the group consisting of a drink, a drink mix, a food, a candy, a mouthwash, a toothpaste, a gargle, a vaporizer liquid, a gum, a lozenge, an ingestable gel, an ingestable foam, an ingestable capsule, a tablet, an ingestable tablet, an ingestable dissolvable tablet, a suppository, and an ingestable nutritional supplement, with the proviso that when chondroitin sulfate is used as the sole glycosoaminoglycan, the carrier is not a capsule or an ingestable tablet.

23. (Currently Amended) ~~An orally or mucosally delivered pharmaceutical~~ A composition which comprises as an active ingredient a pharmacologically effective amount of at least one orally ingestable or mucosally absorbable low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans, and optionally with the proviso that said composition does not contain an essential oil as an active ingredient

a carrier selected from the group consisting of a drink, a drink mix, a food, a candy, a mouthwash, a toothpaste, a gargle, a vaporizer liquid, a gum, a lozenge, an ingestable gel, an ingestable foam, an ingestable capsule, a tablet, an ingestable tablet, an ingestable dissolvable tablet, a suppository, and an ingestable nutritional supplement, with the proviso that when chondroitin sulfate is used as the sole glycosaminoglycan, the carrier is not a capsule or an ingestable tablet.

24. (Currently Amended) A method of treatment of inflammation, pain or itching which comprises ~~topically,~~ orally or mucosally ~~applying~~ administering to ~~said~~ a mammal the composition of claim  $\pm$  19.

25. (Currently Amended) The method of claim 24, wherein said ~~topical~~ application is made orally ~~directly over or on the site of inflammation, pain and itching.~~

26. (Original) The method of claim 24, wherein said oral or mucosal application form is selected from the group consisting of a liquid, an emulsion, a suspension, a cream, an ointment, a gel, a foam, a solid, a powder and a gum.

27. (Original) The method of claim 24, wherein said inflammation, pain or itching results from arthritis, bursitis, athletic injuries, tendonitis, trauma, gastritis, colitis, esophagitis, bronchitis, sore throat, tonsillitis, tendonitis, fibromyalgia, TMJ, dental pain, bruising, poor circulation, muscle cramps, tired feet, allergies, poison ivy, insect bites/stings, asthma, anaphylaxis, surgery, childbirth, sunburn, burns, edema related to diabetes, decubitus ulcers, superficial cuts and scrapes, open wounds, dry skin, psoriasis, Attention Deficit Hyperactivity Disorder (ADHD), plaque formation associated with heart disease and stroke, increased degradation of spinal nerves post spinal cord injury, adhesion formation post surgery, scar formation post surgery, wound healing, ganglion formation, Alzheimer's disease, HIV, cancer, wrinkles, and hair loss.

28 - 29. (Cancelled)

30. (Currently Amended) A method of inhibiting the Adhesion cascade by orally or mucosally administering to a mammal the composition of claim 19, ~~a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans, which blocks the binding of leukocytes to the epithelium during tethering in inhibits migration and extravasation of leukocytes to a site of trauma.~~

31. (Currently Amended) A method for inhibiting tumor formation and tumor metastasis which comprises orally or mucosally administering to a mammal the composition of claim 19 ~~a pharmacologically effective amount of at least one low purity complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans which blocks the Metastatic cascade so as to inhibit binding of tumor cells to the epithelium of blood vessel walls.~~

32. (Currently Amended) A method for preventing or treating inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions which comprises orally or mucosally administering to a mammal the composition of claim 19 ±.

33. (Original) A method for preventing or treating inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions which comprises orally administering to a mammal the composition of claim 19.

34. (Original) A method for preventing or treating inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions which comprises mucosally administering to a mammal the composition of claim 19.

35. (Original) The method of Claims 33 or 34 wherein the inflammation, pain, tumor development and metastasis or allergy-related diseases and conditions are selected from the group consisting of arthritis, bursitis, athletic injuries, tendonitis, trauma, anaphylaxis, surgery, childbirth, gastritis, colitis, esophagitis, bronchitis, sore throat, tonsillitis, tendonitis, fibromyalgia, TMJ, dental pain, bruising, poor circulation, muscle cramps, tired feet, allergies, poison ivy,



insect bites/stings, asthma, sunburn, burns, edema related to diabetes, decubitus ulcers, superficial cuts and scrapes, open wounds, dry skin, psoriasis, Attention Deficit Hyperactivity Disorder (ADHD), plaque formation associated with heart disease and stroke, increased degradation of spinal nerves post spinal cord injury, adhesion formation post surgery, scar formation post surgery, wound healing, ganglion formation, Alzheimer's disease, HIV, cancer, wrinkles, and hair loss.

36. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~1-or~~ 19, wherein said at least one complex carbohydrate has a molecular weight in the range of from 1,000 to less than 50,000 daltons.

37. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~1-or~~ 19, wherein said at least one complex carbohydrate has a molecular weight in the range of from 100,000 to 300,000 daltons.

38. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~1-or~~ 19, wherein said at least one complex carbohydrate has a molecular weight in the range of greater than 1,000,000 daltons.

39 - 40. (Cancelled)

41. (Currently Amended) The ~~pharmaceutical~~ composition according to claim 19 ~~1~~, wherein the form is selected from the group consisting of a liquid, an emulsion, a suspension, a solution, a cream, a gel, a foam, a solid, a powder, a spray, a gum and an ointment.

42. (Currently Amended) The ~~pharmaceutical~~ composition according to claim ~~19~~ 23, wherein the form is selected from the group consisting of a liquid, a gel, a solution, a suspension, an emulsion, an ointment, a cream, a solid, a powder, a gum and a spray.

43 - 45. (Cancelled)

46. (Currently Amended) The ~~topical—pharmaceutical~~ composition of claim 19, wherein said composition is a pain-relieving composition.

47. (Currently Amended) The ~~oral—pharmaceutical~~ composition of claim 19, wherein said composition is ~~a~~ an orally delivered pain-relieving composition.

48. (Currently Amended) The ~~mucosally-delivered~~  
~~pharmaceutical~~ composition of claim 19, ~~21~~, wherein said  
composition is a mucosally delivered a pain-relieving  
composition.

49. (Currently Amended) The ~~oral~~ ~~pharmaceutical~~  
composition of claim 19, wherein said composition is a tumor  
preventative or treatment composition.

50. (Currently Amended) The composition of claim 23, ~~1~~,  
wherein the low purity complex carbohydrate contains up to 5% by  
weight contaminants.

51. (Currently Amended) The composition of claim 23, ~~1~~,  
wherein the low purity complex carbohydrate contains less than  
98% by weight hyaluronic acid.

52. (Currently Amended) A method of treatment of  
inflammation, pain or allergy-related diseases and conditions  
which comprises ~~topically~~ mucosally applying to ~~the skin of~~ a  
mammal the composition of claim 19 ~~1~~.

53. (Currently Amended) The ~~pharmaceutical~~ composition of claim 19, ~~17~~ wherein the active ingredient is present in an amount of at least 0.01% wt/vol.

54. (Currently Amended) The ~~pharmaceutical~~ composition of claim 19 ~~1~~, wherein the active ingredient is present in an amount of at least 1% wt/vol.

55 - 58. (Cancelled)

59. (Currently Amended) The ~~pharmaceutical~~ composition of claim 23, ~~17~~ wherein said at least one low purity complex carbohydrate is a low or cosmetic or food grade complex carbohydrate having ~~has~~ a molecular weight in the range of from 1,000 to less than 50,000, from 100,000 to 500,000, or greater than 1,000,000.

60. (Currently Amended) The ~~pharmaceutical~~ composition of claim 19, wherein the polysaccharides are selected from the group consisting of mannans and branched polysaccharides.

61 - 62. (Cancelled)

63. (Original) A method of preventing and treating diseases and conditions associated with the adhesion, metastatic or coronary cascades or are related to allergies, comprising orally or mucosally applying complex carbohydrates as the sole active ingredient.

64. (Currently Amended) The methods of claim ~~Claims 62 or~~ 63, wherein the complex carbohydrates are administered as repeated low doses.

65. (Original) The method of claim 64, wherein said repeated low doses are between 0.0001 mg and 100 mg of said sole active ingredient.

66. (Currently Amended) The compositions according to claims 41 or 42, wherein the form ~~forms~~ of the composition is selected from the group consisting of ~~are delivered in~~ drinks, drink mixes, foods, supplements, mouthwashes, toothpaste, gargle, throat spray, vaporizers, chewing gum, throat lozenges, treats, candy, capsules, tablets, dissolvable gum and ~~or~~ suppositories.

67. (Original) The method of claims 63 or 64 wherein the diseases and conditions are selected from the group consisting of arthritis, gastritis, colitis, esophagitis, bronchitis, sore throat, tonsillitis, tendonitis, fibromyalgia, sunburn, heat burns, temporomandibular joint (TMJ) condition, dental pain, gingivitis, post surgical pain, itching associated with allergies and hypersensitivity, poison ivy, asthma, anaphylaxis, post surgical pain, childbirth, Attention Deficit Hyperactivity Disorder (ADHD), plaque formation associated with heart disease and stroke, increased degradation of spinal nerves post spinal cord injury, adhesion formation post surgery, scar formation post surgery, wound healing, decubitis ulcers, ganglion formation, Alzheimer's disease, HIV, cancer, Diabetes, skin problems such as acne, psoriasis, wrinkles, and hair loss.

68. (Cancelled)

69. (Currently Amended) The composition according to claim 19, ~~claims 1 or 19~~, wherein the complex carbohydrate is a hyaluronic acid or salt or derivative thereof.

70. (Currently Amended) An orally ingested or mucosally absorbed ~~mucosally-administered~~ pharmaceutical composition selected from the group consisting of a drink, a drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, which comprises as an active ingredient a pharmacologically effective amount of at least one complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides, and glycosaminoglycans with the proviso that said composition does not contain an essential oil as an active ingredient, with the proviso that when chondroitin sulfate is used as the sole glycosaminoglycan, the carrier is not a capsule or an ingestable tablet.

71. (New) The composition of claim 19, wherein said complex carbohydrates are present in an amount of 0.0001 mg to 100 mg.

72. (New) The composition of claim 23, wherein said low purity complex carbohydrate contains up to about 5% impurities, and will cause reactions when injected into monkey eyes or joints of horses but will not cause reactions when applied to the skin of mammals or when delivered orally or mucosally to

mammals.

73. (New) An orally ingested or mucosally-absorbed pharmaceutical composition selected from the group consisting of drink, drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, which comprises:

an effective amount of at least one complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides, and glycosaminoglycans for treating inflammation, with the proviso that said composition does not contain an essential oil as an active ingredient,

wherein said orally ingested or mucosally-absorbed pharmaceutical composition is selected from the group consisting of drink, drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, with the proviso that when chondroitin sulfate is used as the sole glycosaminoglycan, the carrier is not a capsule or an ingestable tablet.



74. (New) Drink comprising the composition of claim 73.
75. (New) Drink mix comprising the composition of claim 73.
76. (New) Food comprising the composition of claim 73.
77. (New) Candy comprising the composition of claim 73.
78. (New) Mouthwash comprising the composition of claim 73.
79. (New) Toothpaste comprising the composition of claim  
73.
80. (New) Gargle comprising the composition of claim 73.
81. (New) Vaporizer comprising the composition of claim 73.
82. (New) Gum comprising the composition of claim 73.
83. (New) Lozenge comprising the composition of claim 73.
84. (New) Ingestable gel comprising the composition of  
claim 73.
85. (New) Ingestable foam comprising the composition of  
claim 73.

86. (New) Ingestable capsule comprising the composition of claim 73.

87. (New) Tablet comprising the composition of claim 73.

88. (New) Ingestable tablet comprising the composition of claim 73.

89. (New) Ingestable dissolvable tablet comprising the composition of claim 73.

90. (New) Suppository comprising the composition of claim 73.

91. (New) Ingestable nutritional supplement comprising the composition of claim 73.

92. (New) An orally ingested or mucosally absorbed pharmaceutical composition selected from the group consisting of drink, drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, which comprises, as an active ingredient, a pharmacologically effective amount of at least one complex

carbohydrate selected from the group consisting of a mixture of high and low molecular weight ranges of hyaluronic acid, with the proviso that said composition does not contain an essential oil as an active ingredient,

wherein said orally or mucosally-administered pharmaceutical composition is selected from the group consisting of drink, drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, with the proviso that when chondroitin sulfate is used as the sole glycosoaminoglycan, the carrier is not a capsule or an ingestable tablet.

93. (New) The composition of claim 92, wherein the hyaluronic acid is a low purity hyaluronic acid in a total concentration of between 0.5% and 3.0% wt/vol.

94. (New) An orally ingested or mucosally-absorbed pharmaceutical composition selected from the group consisting of drink, drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, which comprises as an active ingredient a pharmacologically effective amount of at least one complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides and glycosaminoglycans, with the proviso that said composition does not contain an essential oil as an active ingredient,

wherein said orally ingested or mucosally-absorbed pharmaceutical composition is selected from the group consisting of drink, drink mix, food, candy, mouthwash, toothpaste, gargle, vaporizer, gum, lozenge, ingestable gel, ingestable foam, ingestable capsule, tablet, ingestable tablet, ingestable dissolvable tablet, suppository, and ingestable nutritional supplement, with the proviso that when chondroitin sulfate is used as the sole glycosaminoglycan, the carrier is not a capsule or an ingestable tablet.

95. (New) The composition of claim 94, wherein the complex carbohydrate is a low purity complex carbohydrate.

96. (New) The method of claim 24, wherein said application is made mucosally.

97. (New) A method for relieving joint pain or other discomforts associated with osteoarthritis in a mammal comprising the step of delivering to said mammal by oral ingestion of a nutritional supplement consisting essentially of an effective amount of hyaluronic acid, or a salt or digest thereof, and a food or drink carrier, wherein the effective amount of hyaluronic acid, or a salt or digest thereof, is from about 0.0001 mg to 100 mg.

98. (New) The method of claim 97, further comprising the step of adding the hyaluronic acid, or a salt or digest thereof, to the carrier, and wherein the carrier comprises food or water.

99. (New) The method of claim 97, wherein the nutritional supplement is provided in capsule form.

100. (New) The method of claim 97, wherein the mammal is a human, an equine, a canine, or feline species.

101. (New) A method for reducing discomfort of fibromyalgia in a person afflicted with fibromyalgia comprising the step of delivering to said person by oral ingestion a nutritional supplement consisting essentially of an effective amount of hyaluronic acid, or a salt or digest thereof, and a nutritionally acceptable carrier, wherein the effective amount of hyaluronic acid, or a salt or digest thereof, is from about 0.0001 mg to 100 mg per dose.

102. (New) The method of claim 101, further comprising the step of adding the hyaluronic acid, or a salt or digest thereof, to the carrier, and wherein the carrier comprises food or water.

103. (New) The method of claim 101, wherein the nutritional supplement is provided in capsule form.

104. (New) A method for relieving joint pain or other discomforts associated with joint disorders in a mammal comprising the step of delivering to said mammal by oral ingestion a nutritional supplement consisting essentially of an effective amount of hyaluronic acid, or a salt or digest thereof, and a food or drink carrier, wherein the effective amount of hyaluronic acid, or a salt or digest thereof, is from about 0.0001 mg to about 100 mg per dose.

105. (New) The method of claim 102, wherein the nutritional supplement is provided in tablet form.

106. (New) The method of claim 104, further comprising the step of adding the hyaluronic acid, or a salt or digest thereof, to the carrier, and wherein the carrier comprises food or water.

107. (New) The method of claim 104, wherein the nutritional supplement is provided in capsule form.

108. (New) The method of claim 104, wherein the mammal is a human, an equine, a canine, or a feline species.

109. (New) The method of claim 104, wherein the joint pain is the result of an arthritic condition.

110. (New) The method of claim 104, wherein the arthritic condition is selected from the group consisting of osteoarthritis and rheumatoid arthritis.

111. (New) The method of claim 104, wherein the joint pain is the result of an inflammatory condition.

112. (New) A nutritional supplement consisting essentially of an effective amount of hyaluronic acid, or a salt or digest thereof, and a food or drink carrier, the nutritional supplement provided in an orally ingestible dosage form.

113. (New) The nutritional supplement of claim 112, wherein the effective amount of hyaluronic acid is 0.0001 mg to 100 mg.

114. (New) The nutritional supplement of claim 112, wherein the orally ingestible dosage form is a capsule or gel seal.

115. (New) Food or treat for horse or dog comprising the composition of claim 19.

116. (New) The method of claim 24, wherein said complex carbohydrates are administered in multiple low doses of 0.0001 mg to 100 mg body weight.

117. (New) A composition comprising at least one orally digestable or mucosally absorbable complex carbohydrate selected from the group consisting of oligosaccharides, sialylated oligosaccharides, polysaccharides, and glycosaminoglycans, wherein said at least one complex carbohydrate is mixed in a



drink, a drink mix, a food, a candy, a mouthwash, a toothpaste, a gargle, a vaporizer liquid, a gum, a lozenge, an ingestable gel, an ingestable foam, an ingestable capsule, an ingestable tablet, a chewable tablet, a dissolvable tablet, and an ingestable nutritional supplement so that they contain at least 0.00005mg of the complex carbohydrate, with the proviso that when chondroitin sulfate is used as the sole glycosoaminoglycan, the carrier is not a capsule or an ingestable tablet.

118. (New)        The composition of claim 19, wherein said composition is a topical, oral or mucosal composition.